Fifth Semester B.E. Degree Examination, July/August 2021
Computer Networks – I

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Define protocol. List and explain key elements of a protocol. **(05 Marks)**
  b. With a necessary diagram correlate TCP/IP with layers of OSI model. **(10 Marks)**
  c. List and explain different addresses in TCP/IP. **(05 Marks)**

2 a. For the given string 11011001 represent the unipolar, polar NRZ, Manchester and differential Manchester encoding techniques. **(05 Marks)**
  b. Identify the different transmission impairments observed in data transfer. **(05 Marks)**
  c. A telephone line has a bandwidth of 3000 Hz assigned for data communication. The SNR ratio is 3162. Calculate the capacity of the channel. (SNR refers to signal to noise ratio). **(05 Marks)**
  d. Explain the concept of shift keying. **(05 Marks)**

3 a. Why does multiplexing significant in data transmission? **(02 Marks)**
  b. What is synchronous TDM? Explain. **(04 Marks)**
  c. What is the main purpose of spread spectrum? Explain FHSS. **(08 Marks)**
  d. What do you mean by datagram network? Explain its working principle. **(06 Marks)**

4 a. Given dataword "1010" and divisor "1011". Using CRC find the codeword. **(06 Marks)**
  b. With a necessary diagram, explain structure of the encoder and decoder for Hamming code with 4 bit dataword. **(10 Marks)**
  c. Consider the table shown to represent code.

Dataword	Codeword
0	00000
1	01011
2	10111
3	11111

Check whether the code is linear code or non-linear code. **(04 Marks)**

5 a. Compare and contrast the Go Back N-ARQ protocol with selective repeat ARQ. **(10 Marks)**
  b. Define framing and explain its need in data link layer. **(05 Marks)**
  c. Assume that, in a stop and wait ARQ system, the bandwidth of the line is 1 Mbps and 1 bit takes 20 ms to make a round trip. What is the bandwidth delay product? **(05 Marks)**

6 a. Explain slotted ALOHA. **(08 Marks)**
  b. Write the chip sequence for 2-stations and for 4-stations using Walsh table. **(04 Marks)**
  c. What is the role of MAC sublayer? Explain 802.3 MAC-frame. **(08 Marks)**

7 a. Explain different kinds of services defined by IEEE 802.11 architecture. **(10 Marks)**
  b. With a neat diagram, explain different categories of connecting devices. **(10 Marks)**

8 a. What is NAT and how can NAT help in address depletion? **(05 Marks)**
  b. Compare and contrast the fields in the main headers of IPV4 and IPV6 protocols. **(10 Marks)**
  c. Change the following IPV4 addresses from dotted decimal notation to binary notation:
   i) 111.56.45.78   ii) 221.34.7.82 **(05 Marks)**

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